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DOE SC/HEP Accelerator Stewardship Test Facility Pilot Program Kickoff Meeting

May 3, 2015
Richmond, VA

ASTFPP Contact: Eric.Colby@Science.DOE.GOV, (301)-903-5475

Outline

- **Origin and Motivation**
- **Goals of the Pilot Program**
- **Rules of Engagement**
- **Kickoff Meeting Charge and Agenda**



In 2011 the Senate noted the interest generated by the Accelerators for America's Future Workshop, and asked DOE to develop a plan



"The [SEWD] Committee directs the Department to submit a ...

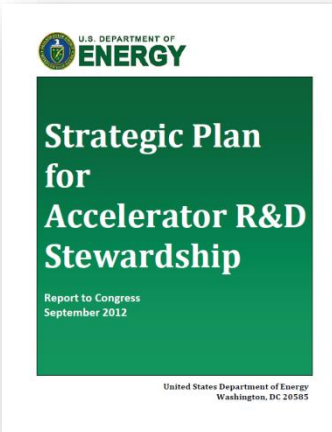
10-year strategic plan ... for research and development

The strategic plan should be based on the workshop study, Accelerators for America's

Senate Report 112-075, p. 93. (Ordered to be printed

The Accelerator Stewardship Test Facility Pilot Program addresses this element of the Stewardship mission

DOE responded with a strategic plan for Accelerator R&D Stewardship



■ Accelerator R&D Stewardship Mission

- Support fundamental accelerator science and technology R&D
- Disseminate accelerator knowledge and training

■ Program Implementation:

- **Facilitate access to** national laboratory accelerator **facilities** and infrastructure **for industrial and U.S. government agency users/developers** of accelerators and related technology
- **Develop innovative solutions to critical problems, to the benefit of both the broader user communities and the DOE discovery science community**
- Serve as a catalyst **to broaden and strengthen the community** that relies on accelerators and accelerator technology



Authority & sense of the Congress

physics used similar funding scenarios and should serve as a model for assessing priorities for the fusion program.

FY 2014
Language

High Energy Physics.—Within available funds, the agreement provides \$15,000,000 to support minimal, sustaining operations at the Homestake Mine in South Dakota, \$9,931,000 for Accelerator Stewardship, and \$26,000,000 for the Long Baseline Neutrino Experiment (LBNE), to include \$10,000,000

*“The challenge you’ll be facing this afternoon is . . . to explain to this Subcommittee, populated as it is with non-scientists like myself, why investing in your programs is a good use of taxpayer dollars. Your program has, of course, generally received broad bipartisan support. However, as budgets continue to be constrained, **you and your colleagues will have to work even harder to find ways to illustrate the importance of your programs** as they compete with other programs for funding.”*

FY 2015
Language

The Committee recommends \$19,184,000 as requested for Accelerator Stewardship. The Committee continues to support the Office of Science’s efforts to make unique test facilities available to U.S. industry to accelerate applications of accelerator technology and to work with industry to identify accelerator technologies needed to address many of the medical, industrial, and national security issues confronting the country.

FY2015 Draft Energy and Water Development Appropriations Bill
S. 0000, (June ---, 2014)

4,000 for

increased and computational physics, \$120,000,000 for advanced technology research and development, of which \$45,772,000 is for general accelerators; and \$10,000,000 for accelerator stewardship.

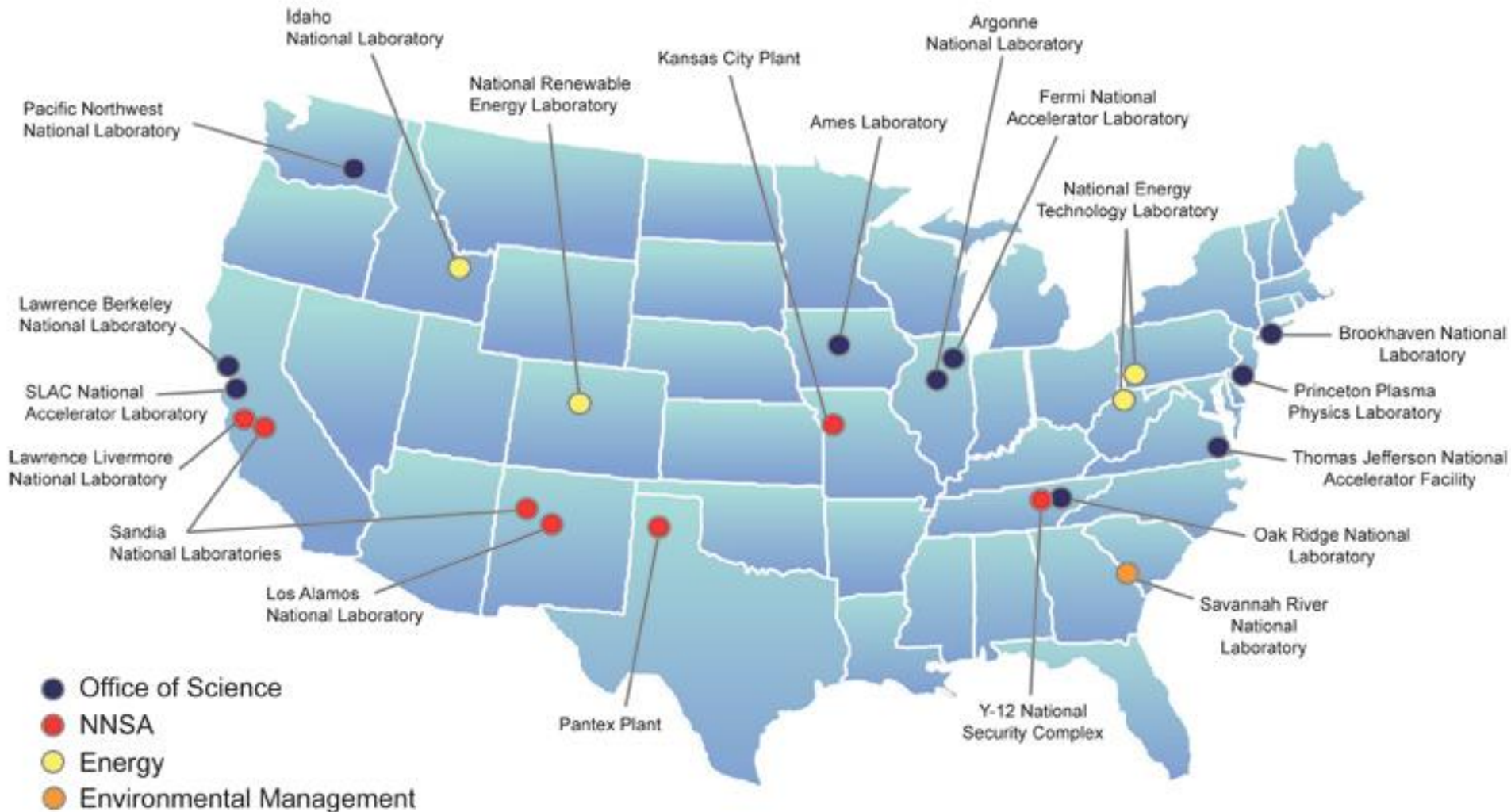


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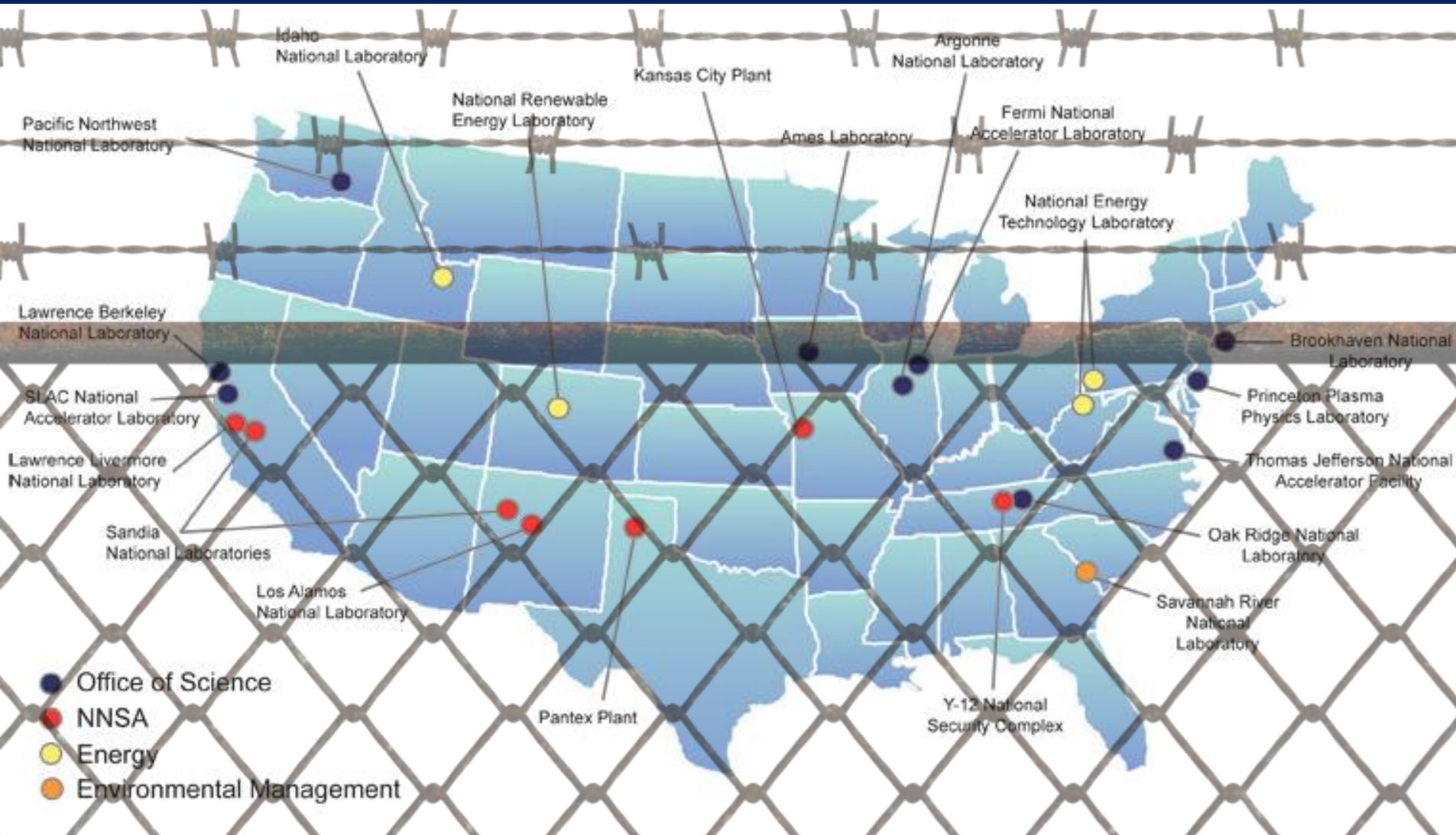
Nuclear Physics.—Within available funds, the agreement provides \$150,800,000 for medium- and high-energy physics, \$120,000,000 for advanced technology research and development, of which \$45,772,000 is for general accelerators; and \$10,000,000 for accelerator stewardship.

EXPLANATORY STATEMENT DIVISION D—ENERGY AND WATER DEVELOPMENT AND RELATED AGENCIES, APPROPRIATIONS ACT, 2015.

This is how DOE National Laboratories see themselves...



...and this is how industry has viewed us.



Goals of the Accelerator Stewardship Test Facility Pilot Program

- Widely publicize available Office of Science (SC) accelerator R&D infrastructure
 - Through individual, lab-organized outreach events, publicize the lesser-known accelerator R&D infrastructure to a wide audience
- Survey the potential Stewardship demand for this R&D infrastructure
 - Identify potential collaborative activities that bring high added value to both the lab and the Stewardship partner
- Seed fund a few R&D examples
 - A few cases will be selected for FY 15 funding by a peer-review process
- Test the process for engaging Stewardship partners.
 - The business and legal mechanism, outreach methods, general support needs, etc.

The results of the Pilot Program will be used to formulate a follow-on program for funding Stewardship use of DOE National Laboratory accelerator R&D infrastructure.



ASTFPP Authorizing Memo

July 28, 2014



Department of Energy
Office of Science
Washington, DC 20585

July 28, 2014

TO: DIRECTORS OF OFFICE OF SCIENCE
LABORATORIES WITH ACCELERATOR R&D
INFRASTRUCTURE

THROUGH: PATRICIA M. DEHMER *Patricia M. Dehmer*
DEPUTY DIRECTOR FOR SCIENCE PROGRAMS,
OFFICE OF SCIENCE

FROM: JAMES SIEGRIST *js*
ASSOCIATE DIRECTOR FOR HIGH ENERGY
PHYSICS, OFFICE OF SCIENCE

TIMOTHY J. HALLMAN *Timothy J. Hallman*
ASSOCIATE DIRECTOR FOR NUCLEAR PHYSICS,
OFFICE OF SCIENCE

HARRIET KUNG *Harriet Kung*
ASSOCIATE DIRECTOR FOR BASIC ENERGY
SCIENCES, OFFICE OF SCIENCE

SUBJECT: ACCELERATOR STEWARDSHIP TEST FACILITY
PILOT PROGRAM

This memorandum defines applicable facilities and rules of engagement for the Accelerator Stewardship Test Facility Pilot Program ("Pilot Program").

Accelerator Stewardship

The Accelerator Stewardship program was authorized by Congress for the first time in FY 2014. The Stewardship program is intended to provide modest funding to leverage



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2012 Survey of SC Accelerator Test Facilities

- In addition to broad expertise in accelerator and component design, specialized infrastructure exists, which falls mainly into these categories:
 - Beam test facilities
 - electrons, neutrons, protons, light and heavy ions
 - includes particle sources, transport lines, diagnostics, laser-driven accelerators
 - Superconducting cable/strand and cavity preparation and testing facilities
 - cabling equipment, heat treatment ovens, clean rooms
 - Cavity polishing, chemistry, test dewars, etc.
 - Magnet test facilities
 - power supplies, cryogenic test stands, field mapping
 - RF test facilities
 - RF power sources, cryogenic test stands, processing capabilities, clean rooms
 - High-performance computing expertise
 - includes finite-element calculations, general accelerator design, nonlinear beam dynamics and beam transport, radiation shielding, electromagnetic modeling
 - Fabrication and materials characterization facilities
 - high accuracy NC machine tools, CMMs, e-beam welders, wire EDM, chemical cleaning, electro-polishing, SEMs, laser trackers, coating systems, remote handling,...

Facilities Listing Summary

Derived from Lab Responses to 2012 Siegrist Request for Information

| Lab | Acronym | Facility Name | Availability | Accelerator or related? | Facility Category | Mission Critical? | Facility Type | Landlord agency | Existing PAC? | Survey Respondent |
|------|---------|---|----------------------|-------------------------|-------------------|-------------------|--------------------------|-----------------|---------------|-------------------|
| ANL | APS | APS Injector test stand | | y | Acc | y | LE Elec | BES | no? | Gerig? |
| ANL | APS | APS rf test stands, s-band, 352 | ~20% | y | Tech | y | HPRF | BES | no? | Gerig? |
| LBNL | ALS | Advanced Light Source | | y | Acc | y | HE Elec | BES | yes | Seidl |
| ORNL | SNS | Spallation Neutron Source | | y | Acc | y | HE Prot | BES | yes? | Mason |
| SLAC | SSRL | Stanford Synchrotron Radiation Lightsources | | y | Acc | y | HE Elec | BES | yes | Ross |
| LBNL | | Composites R&D | | n | Skill | n | Fab | BES | no? | Seidl |
| LBNL | | Microsystems Laboratory | | n | Tech | n | Det | BES | no? | Seidl |
| LBNL | | Semicon Detector Fab Lab | | n | Tech | n | Det | BES | no? | Seidl |
| ORNL | | Hydrogen Moderator Test Facility | | n | Tech | n | Cryo | BES | no | Mason |
| ORNL | | Remote Handling Facility | | n | Tech | n | Fab | BES | no | Mason |
| PNNL | EMSL | Environmental & Molecular Science Laboratory | | n | Acc | n | LE Ion | BES | no | Kluse |
| SLAC | | Plating and Cleaning Shop | | n | Skill | n | Fab | BES | no | Ross |
| LBNL | APEX | Advanced Photoinjector Experiment | | y | Acc | n | LE Elec | BES | no? | Seidl |
| ORNL | | HV Modulator Test Facility | | y | Tech | n | HPRF | BES | no | Mason |
| ORNL | | Magnet Mapping Facility | | y | Tech | n | Fab | BES | no | Mason |
| ORNL | | Mercury Test Loop | | y | Tech | n | Other | BES | no | Mason |
| ORNL | | Radiation Physics | | y | Skill | n | Comp | BES | no | Mason |
| ORNL | | RF Test Facility 402.5, 805 | | y | Tech | n | HPRF | BES | no | Mason |
| ORNL | SRF | SRF Facilities | | y | Tech | n | SCRFF | BES | no | Mason |
| SLAC | | Klystron Fabrication Facility | | y | Tech | n | Fab | BES | no | Ross |
| SLAC | KTF | Klystron Test Facility | | y | Tech | n | HPRF | BES | no | Ross |
| SLAC | | Laser Systems Design | | y | Skill | n | Fab | BES | no | Ross |
| SLAC | | Power Engineering, RF Design | | y | Skill | n | HPRF | BES | no | Ross |
| SLAC | | Radiation Physics | | y | Skill | n | Comp | BES | no | Ross |
| ANL | | Chemistry Linac | | y | Acc | ? | ME Elec | BES | no? | Gerig? |
| ANL | | Van de Graaff | | y | Acc | ? | LE Ion | BES | no? | Gerig? |
| ORNL | | Ion Source Test Stands | | y | Acc | ? | LE Ion | BES | no | Mason |
| LBNL | NDCX-II | Neutral Drift Compression Experiment | | y | Acc | ? | LE Ion | FES | no? | Seidl |
| FNAL | NTF | Neutron Therapy Facility | | y | Acc | y | LE Neut | HEP | yes? | Garbincius |
| FNAL | | Test Beams | | y | Acc | y | HE Prot | HEP | yes? | Garbincius |
| SLAC | ASSET | Accelerator Structure Setup | | y | Acc | y | HE Elec | HEP | yes | Ross |
| SLAC | FACET | Facility for Accelerator Experiments and Test beams | | y | Acc | y | HE Elec | HEP | yes | Ross |
| FNAL | | Detector Development Facility | | n | Det | n | Det | HEP | no? | Garbincius |
| ANL | AWA | Argonne Wakefield Accelerator | ~20% | y | Acc | n | LE Elec | HEP | no | Gerig? |
| BNL | ATF | Accelerator Test Facility | | y | Acc | n | ME Elec | HEP | yes | Ben-Zvi |
| FNAL | ASTA | Advanced Superconducting Test Accelerator | n.o. | y | Acc | n | ME Elec | HEP | no | Garbincius |
| FNAL | HINS | High Intensity Neutrino Source | | y | Acc | n | ME Prot | HEP | no? | Garbincius |
| FNAL | MTA | MuCool Test Area | | y | Acc | n | LE Prot | HEP | no? | Garbincius |
| FNAL | | SciDAC CompPASS | | y | Skill | n | Comp | HEP | no? | Garbincius |
| LBNL | | Accelerator Code Group | | y | Skill | n | Comp | HEP | no? | Seidl |
| LBNL | L'Oasis | Laser Wakefield Accelerator | | y | Acc | n | HE Elec | HEP | no? | Seidl |
| LBNL | | SC Magnet Test Facility | | y | Tech | n | SC Mag | HEP | no? | Seidl |
| SLAC | ACE3P | Accelerator EM Modeling | | y | Skill | n | RF | HEP | no | Ross |
| SLAC | ASTA | Accelerator Structure Test Area | | y | Tech | n | HPRF | HEP | no | Ross |
| SLAC | ESTB | End Station Test Beam | | y | Acc | n | HE Elec | HEP | yes | Ross |
| SLAC | NLCTA | Next Linear Collider Test Accelerator | | y | Acc | n | ME Elec | HEP | yes | Ross |
| JLAB | FEL | FEL Facilities | | y | Acc | y | HE Elec | NP | yes? | Neal? |
| JLAB | PLD | Pulsed Laser Deposition Apparatus | | n | Tech | n | Fab | NP | no? | Neal? |
| ANL | SCSPF | SC Cavity Surface Processing Facility | | y | Tech | n | SRF | NP | no? | Gerig? |
| JLAB | MES | Laser Micro-Engineering Facility | | y | Tech | n | Fab | NP | no? | Neal? |
| JLAB | SRF | SRF Facility | | y | Tech | n | SRF | NP | no? | Neal? |
| LBNL | VENUS | VENUS Ion Source | | y | Acc | n | LE Ion | NP | no? | Seidl |
| ANL | ATLAS | ATLAS beamlines | <10% | y | Acc | ? | HE Ion | NP | yes | Gerig? |
| ANL | ATLAS | ATLAS ECR Ion Sources | 10-15% | y | Acc | ? | LE Ion | NP | yes | Gerig? |
| LBNL | 88" Cyc | 88" Cyclotron | | y | Acc | ? | LE Ion | NP | no? | Seidl |
| ORNL | HRIBF | Holifield Radioactive Ion Beam Facility | | y | Acc | ? | LE Ion | NP | yes? | Mason |
| | | | n.o.=not operational | | | | | | | |
| | | | | | | | LE<50 MeV HE>1 GeV ke | | | |



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What is the Pilot Program funding for? How much is it?

- **The Pilot Program funding is intended to:**
 - Enable labs to inventory and publicize available accelerator R&D infrastructure
 - Offset the *incremental costs* associated with a Stewardship partner's use of laboratory accelerator R&D infrastructure (provided the results are published), for example:
 - One-time safety review and engineering costs associated with evaluating and interfacing the equipment to the lab's facility
 - *Direct costs* associated with operating the experiment
 - Support laboratory personnel to collaborate scientifically with the Stewardship partner (experiment design, data analysis, publication)
 - Note that DOE O 522.1 applies
- **The total FY 2015 funding for the entire Pilot Program is ~\$ 1.1 M.**

What is the Pilot Program funding for?

Heuristic sketch of what the ASTFPP funding is intended to cover. Each case will be different, and all cases will have to comply with applicable DOE policy, especially the DOE Orders on Strategic Partnerships (481.1C) and Charging for Services (522.1).

Lab Funded

- Original construction of accelerator test infrastructure
- Routine Maintenance
- Mission-driven upgrades

Possibly Stewardship Funded

- Lab personnel collaborative participation in R&D effort
- If the SP* publishes results:
 - Direct costs associated with operating a user experiment:
 - Safety evaluation and engineering integration of the user's experiment
 - Facility-side hardware and software costs unique to user's application
 - Machine operating costs

SP* Funded

- SP-supplied equipment & software
- SP personnel participation
- If the SP does **not** publish the results:
 - Direct costs associated with operating the user experiment



Which labs and facilities can participate in ASTFPP?

- Eligible National Laboratories
 - DOE Office of Science National Laboratories with appreciable accelerator R&D infrastructure
 - ANL, BNL, FNAL, LBNL, ORNL, SLAC, TJNAF
- Eligible Accelerator R&D Facilities
 - Only **non-mission-critical** facilities are eligible
 - **NO** National User Facilities
 - E.g. APS, NSLS-II, Fermi Accelerator Complex*, ALS, SNS, CEBAF, LCLS-I
 - **NO** accelerator test infrastructure that is critical to the operation of a National User Facility
 - CAN include competencies that are unique
 - Beam dynamics, HPC for accelerator modeling, etc.

* Parasitic use of the Fermilab Accelerator Complex *may* be considered.

Who can participate? What activities are sought?

- Eligible Participants

- **On the National Laboratory side:** any personnel qualified to engage in the proposed work
- **On the Stewardship Partner side:** qualified personnel from industry, academia, another Lab, or another non-HEP organization at the same Lab

- Eligible Activities

- High-value-added collaborative R&D opportunities that exploit and develop unique skills and facilities at the lab to assist a non-HEP entity in developing a new application of accelerator technology.
- TRL1 through TRL6* R&D only. Given funding and duration limitations, work beyond TRL4 seems unlikely.
- Stewardship activity **must not impact** the primary mission of these facilities.

Can foreign entities participate?

- **Nationality of Partnering Organizations**
 - Domestic organizations are eligible
 - Foreign organizations are not specifically excluded, however, per 48 CFR 970.2770-4(a) § F:
 - “...the contractor shall, in its licensing and assignments of intellectual property, give preference in such a manner as to enhance the accrual of economic and technological benefits to the U.S. domestic economy.”
 - Each activity should be structured to improve the economic competitiveness of the U.S.
 - This can still mean a foreign entity can be a participant if, for example, it provides unique expertise that is not available in the U.S.

Other considerations

- **Proprietary work may be conducted, but note that the full cost recovery provisions of DOE O 522.1 then apply.**
- **No classified work will be supported under the Accelerator Stewardship Test Facility Pilot Program.**

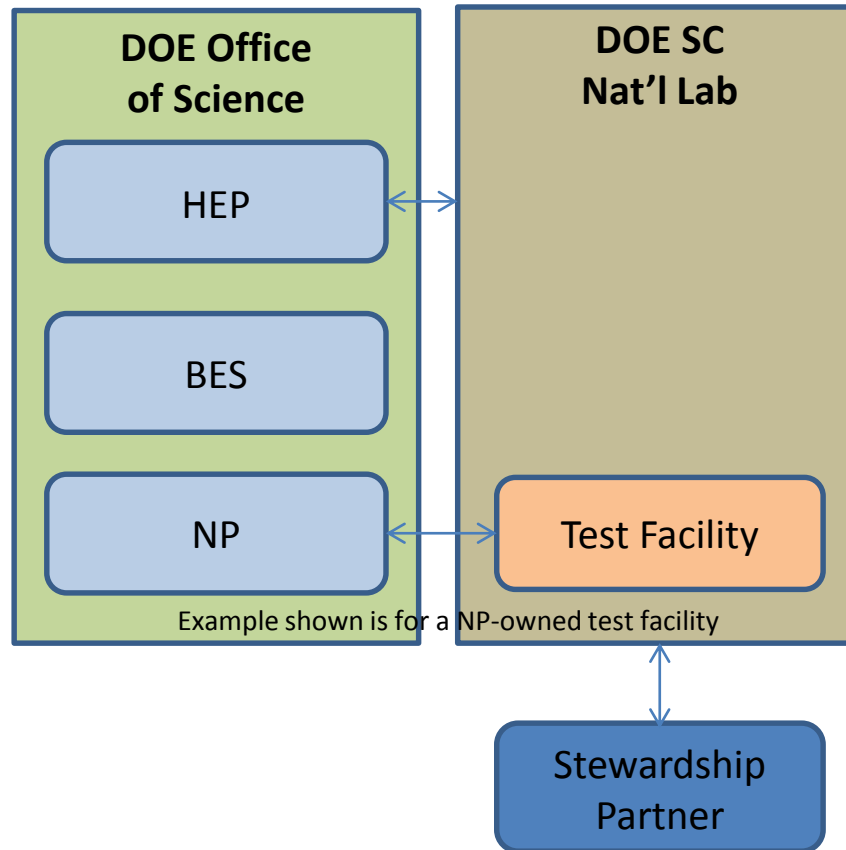
Roles and Responsibilities

HEP

- Manages ASTFPP, organizes Kickoff
- Calls for proposals
- Secures merit reviews of proposals
- Secures allow/disallow from TFAO
- Funds activity consistent with DOE O 522.1
- Evaluates ASTFPP, formulates follow-on

Test Facility Asset Owner (TFAO)

- Allows/disallows Stewardship activity at its facility



Host Nat'l Lab (NL)

- Conducts outreach
- Evaluates possible Stewardship activities
- Collaborates with SP to prepare a proposal
- Trains, oversees, manages Stewardship activity
- Schedules and operates its facilities
- Communicates schedule risks to SP

Stewardship Partner (SP)

- Collaborates with NL to prepare a proposal
- Funds partner-supplied apparatus and personnel
- Secures approvals and training needed
- Takes primary responsibility for outcome

How do we get started?

- **Key dates in 2015 Pilot Year**

- 2/27/15 Labs notified of ASTFPP launch
- 4/1/15 Funding to most labs for outreach event
- April/May Labs conduct public outreach events
- 5/3/15 **ASTFPP Kickoff Meeting held at IPAC'15**
- 6/15/15 **Labs submit FWPs to HEP for seed funding**
- mid-July External peer reviews of FWPs completed, vetting with other SC Offices completed, pilot program awards selected
- Aug/Sept Seed funding to labs by AFP

- **Will analyze outcomes of initial seed-funded efforts in Spring 2016**



Initial Public Outreach

- **Identify prospective Stewardship partners and their needs, and develop a clear picture of needed resources to support the partners' requests.**
 - Each lab should conduct a ***well-publicized outreach event*** prior to the Pilot Program Kickoff Meeting. Each lab should determine the most effective way to conduct this outreach, whether it takes the form of an open house, a workshop, a town hall, a series of one-on-one meetings, etc. The goals of the outreach are to:
 - Educate the community about the lab's accelerator test facilities and accelerator expertise, and
 - Engage potential Stewardship partners in discussion about their needs.
 - What facilities are needed, and what lab-supplied interface hardware and software are needed? Are any modest infrastructure upgrades needed?
 - What are the scheduling needs of the Stewardship partners? How long do they require the facility, and how much advance notice can they provide or need?
 - What supporting safety, engineering, software, instrumentation, oversight, and other services are needed?
 - What IP protections are required? What type of agreement will be used— CRADA, WFOA, UA, or other mechanism?

May 3rd ASTFPP Kickoff Meeting Outcomes

- **Lab facility webpages updated and made more informative**
- **A snapshot of the current user opportunities that includes a sense of the value, programmatic synergy, and resource needs of the opportunities**
- **Identify best business practices in handling facility usage, and opportunities to streamline and regularize the process across the labs**
- **Broader awareness of outreach strategies**

And:

- **Labs briefed on program process, deadlines, eligibility, and expectations.**



Charge for the May 3rd ASTFPP Kickoff Meeting

- **Inventory available accelerator facilities and competencies**
 - Each lab is asked to present a 20-minute synopsis of facility capabilities and availability
- **Discuss prospective stewardship uses for accelerator facilities**
 - Each lab is asked to present a 15-minute synopsis of potential user requests for facilities. If the public outreach event has not yet occurred, present a summary of the planned outreach effort.
- **Discuss current business practices and operating models, and seek ways to improve efficiency and consistency**
 - **Streamlining the formal aspects of the process**
 - Each lab is asked to present a 20-minute synopsis of their business model for stewardship use of facilities
 - **Protection of IP and legal matters**
 - Each lab is asked to present a 15-minute synopsis of process and practice for IP protection and forming legal relationships with stewardship users
- **Discuss outreach strategy**
 - Each lab is asked to give a short summary of outreach activities



Meeting Schedule

May 3rd, 2015, Richmond, VA
Marriott Richmond Salons 1-4 and 5

| | | |
|------------|--|---|
| 9:00-9:05 | Welcome | |
| 9:05-9:30 | Context and Charge | |
| 9:30-12:00 | Working Group 1a Facility Capabilities (charge #1) 20' per lab 10' discussion | Working Group 2a Business Model (charge #3a) 20' per lab 10' discussion |
| 12:00-1:00 | Lunch | |
| 1:00-3:00 | Working Group 1b User Needs (charge #2) 15' per lab 15' discussion | Working Group 2b Legal Aspects (charge #3b) 15' per lab 15' discussion |
| 3:00-4:00 | Break and preparation of working group summaries | |
| 4:00-4:30 | Closing Summaries: User Needs and Business Aspects 5' per working group 10' Discussion | |
| 4:30-5:00 | Outreach Roundtable discussion (charge #4) | |
| 5:00-5:30 | Closing and Next Steps | |



How do we apply for ASTFPP seed funding?

- **In the Pilot year of the program, labs that wish to participate will:**
 - Have completed their outreach events and identified a collaborative R&D partner
 - Submit a stand-alone proposal by June 15, 2015. The proposal should be collaboratively developed by the lab and Stewardship partner, but must be submitted by the lab.
 - The format requirements of this proposal will be defined and outlined at the May 3rd Kickoff meeting.
- **Due to very limited funding, multiple proposal submissions per lab are discouraged.**
 - To communicate the full extent of the demand, however, we will ask each lab to prepare a short report of all the collaborative opportunities it has identified.

How will ASTFPP proposals be selected for funding?

- **As always, proposals will be selected based on:**
 - Merit Review Criteria
 - 10 CFR 605 criteria, plus
 - Accelerator Stewardship R&D Opportunity criteria (next slide)
 - Program Policy Factors
 - Available funding
 - Concurrence of the Test Facility Asset Owner (BES, HEP, or NP)
 - Diversity of stewardship opportunity types
 - As this is a pilot program, a goal is to **fund a diversity of examples** that test the program mechanisms at a variety of lab types (single/multipurpose), “facility” types (physical facility/core competence), and with a range of Stewardship partners (industry/university/etc.), activity types (TRL level), etc.
- N.B.: The “diversity” criteria should not be interpreted as automatic funding for each participating lab that submits a proposal!

Merit Criteria for Accelerator Stewardship Proposals

(in addition to the usual 10CFR605 criteria)

QUALITY OF THE ACCELERATOR R&D STEWARDSHIP OPPORTUNITY

In the questions that follow, the term “**Stewardship customer**” is used broadly to refer to the entity (other than HEP) whose mission or research objectives encompass the proposed work. The Stewardship customer can be another Office of Science (e.g., BES, NP, FES), another DOE program office (e.g., NNSA, EERE, ARPA-E) another federal agency (e.g., NIH, DoD), or industries that use accelerator technology.

1. Does the proposed work require significant scientific or technical **advances in accelerators or accelerator-related technology**? (Accelerator-related technology includes such things as: superconducting magnets and RF cavities, RF and magnet power systems, specialized laser systems, specialized diagnostics and controls, and so on.)
2. Will the proposed work result in substantial **impact on the Stewardship customer's needs** **and** result in some **synergy with the HEP mission**? (synergies might include: developing additional expertise or facilities relevant to present or future HEP-supported work).
3. For the primary participating institution(s), is the activity reasonably **consistent with the institution's primary mission**? (e.g., if a National Laboratory is involved, is the activity consistent with that Laboratory's primary mission?)
4. Is the PI/collaboration arguably **the best performer/provider for the Stewardship activity**? Are other entities capable of providing a substantially similar (or superior) capability?
5. What evidence is there that the **Stewardship customer endorses the goal**? Does this proposal address issues that have been identified in writing (e.g., advisory committee reports, workshop reports, white papers, roadmaps) by the Stewardship customer? Does the Stewardship customer participate substantially and materially in this effort (e.g., by co-funding, cost-sharing, in-kind donation or equipment, donation of effort)?

Characteristics of Good and Bad Stewardship Opportunities

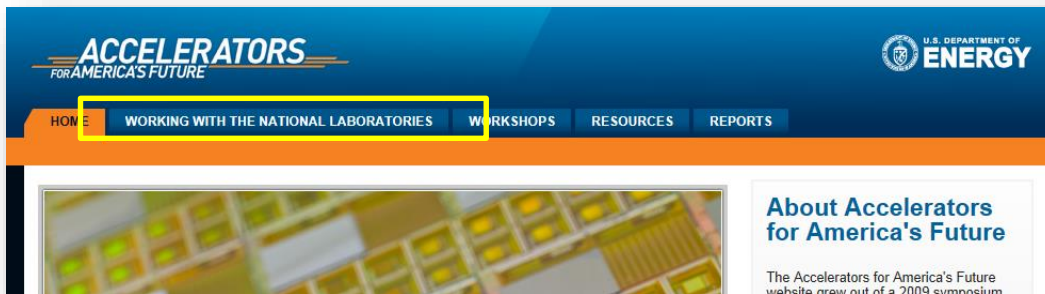
- **Good Opportunities**

- Will have high value to both the Stewardship partner and the lab
 - E.g. R&D collaboration on a topic that is relevant to the lab's mission
 - BOTH the lab personnel and Stewardship partner learn something significant
 - Facility upgrades are made by the partner that will benefit the lab's mission

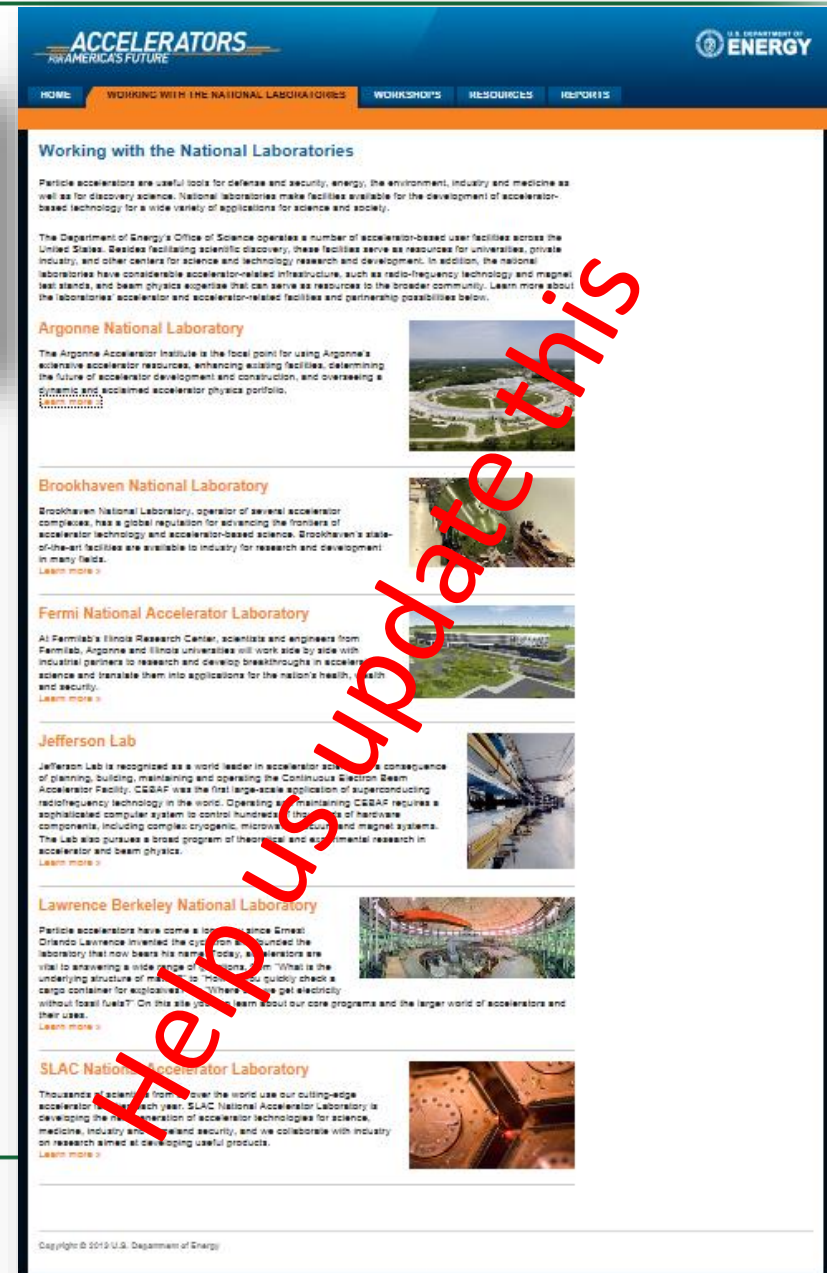
- **Bad Opportunities**

- Busywork with no intellectual return to the lab
- Giveaways of lab personnel time or knowledge with nothing learned in return
- Activities that require substantial infrastructure changes that would interfere with the facility's normal use
- Activities that cannot tolerate the resource risks inherent in parasitic use of facilities
- Work that would put the lab in direct competition with industry

Accelerators for America's Future Web Site



The nation's portal for new users to browse lab capabilities and identify a contact person for more information.



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Useful Resources

- **The HEP Accelerator Stewardship program is described at:**
 - <http://science.energy.gov/hep/research/accelerator-rd-stewardship/>
- **The HEP Accelerator Stewardship program is developing the Accelerator for America's Future website to serve as a portal specific to accelerator facilities:**
 - <http://www.acceleratorsamerica.org/working-with-labs/index.html>
- **More generally, the DOE Office of Technology Transitions maintains:**
 - “How-to” guides for interacting with the labs:
 - <http://technologytransfer.energy.gov/>
 - A general “Portal” for Business to find DOE Labs facilities:
 - <http://www.energy.gov/technologytransitions/who-do-i-contact-labs>
 - A detailed list of facilities:
 - <http://www.energy.gov/technologytransitions/technology-transitions-facilities-database>

Supplementary Materials



Definition of qualifying work

From DOE Order 481.1C (1/24/05)

DOE Order 481.1C “Work for Others” Section 4(c) states:

“The proposed work—

- (1) is consistent with or complementary to missions of DOE/NNSA and the facility to which the work is to be assigned,
- (2) will not adversely impact programs assigned to the facility,
- (3) will not place the facility in direct competition with the domestic private sector, and
- (4) will not create a detrimental future burden on DOE/NNSA resources.”

Charging for Services

from DOE O 522.1 (11/3/04)

k. Use of Facilities. Charges for the use of real property or any facility, structure, or other improvement thereon may be authorized under such terms, at such rates, and for such periods as are deemed to be in the public interest.

l. Office of Science User Facilities. Research user facilities (e.g., accelerators and light sources) managed by the Office of Science are built by the Government with the express purpose of being available for research by a broad community of qualified users on the basis of programmatic interest, scientific merit of research proposals, technical feasibility, capability of the experimental group, and availability of the resources required.

(1) Use of user facilities will be authorized at **no charge** for research which is of DOE programmatic interest and which is approved by laboratory management, usually with the advice of program advisory committees. Use free of charge will apply to experiments approved for conduct during periods in which the facility operates in normal mode for its primary purpose. The facility manager will determine which requests meet those criteria and report periodically to the appropriate DOE program manager.

(2) When facilities are made available for proprietary research, the user will be charged a fee that realizes **full cost recovery** (see paragraph 10b).

(3) When facilities are operated for special circumstances, such as running the facility outside the normal operating mode or schedule, the user will be charged a fee that recovers the **incremental costs**.



Technology Readiness Levels (TRLs) Defined

- For the Accelerator Stewardship Test Facility Pilot Program, the one-year duration and limited funding will generally mean that development up to **TRL3-4** is possible.

NATIONAL NETWORK FOR MANUFACTURING INNOVATION: A PRELIMINARY DESIGN

Table 1. Technology Readiness Levels and Manufacturing Readiness Levels, after [21]

| | | | | |
|-------------|--------|--|--------|--|
| NNMI Target | TRL 1: | Basic principles observed and reported | MRL 1: | Manufacturing feasibility assessed |
| | TRL 2: | Technology concept and/or application formulated | MRL 2: | Manufacturing concepts defined |
| | TRL 3: | Analytical and experimental critical function and/or characteristic proof of concept | MRL 3: | Manufacturing concepts developed |
| | TRL 4: | Component and/or breadboard validation in a laboratory environment | MRL 4: | Capability to produce the technology in a laboratory environment |
| | TRL 5: | Component or breadboard validation in a relevant environment | MRL 5: | Capability to produce prototype components in a production relevant environment |
| | TRL 6: | System/subsystem model or prototype demonstration in a relevant environment | MRL 6: | Capability to produce prototype system or subsystem in a production relevant environment |
| | TRL 7: | System prototype demonstration in an operational environment | MRL 7: | Capability to produce systems, subsystems or components in a production relevant environment |
| | TRL 8: | Actual system completed and qualified through test and demonstrated | MRL 8: | Pilot line capability demonstrated; Ready to begin Low Rate Initial Production |
| | TRL 9: | Actual system proven through successful mission operations | MRL 9: | Low rate production demonstrated; Capability in place to begin Full Rate Production |

Accelerator Stewardship Test Facility Pilot Program

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